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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,925	07/17/2003	Andrew Harvey Barr	200308576-1	2574

22879 7590 12/12/2005

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EXAMINER	
NORRIS, JEREMY C	

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,925	BARR ET AL.	
	Examiner	Art Unit	
	Jeremy C. Norris	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,710,258 (Oggioni).

Regarding claims 1-7:

Oggioni discloses, referring to figures 2a-b, a printed circuit board comprising; a first conductive plane (210b); a second conductive plane (210e) substantially parallel to the first conductive plane; a via signal barrel (145) transecting the first and second conductive planes; a first anti-pad (230b) positioned between the first conductive plane and the via signal barrel, the first anti-pad having a first voided area and a first non-voided area (235b); and a second anti-pad (230e) positioned between the second conductive plane and the via signal barrel, the second anti-pad having a second voided area and a second non-voided area (235e). Oggioni does not specifically state that the first voided area does not completely overlap the second voided area [claim 1]. However, Oggioni teaches that when the dielectric layers of the PCB are different thicknesses, each of the "anti-pad" can be individually crafted to achieve the desired impedance matching (see col. 4, line 50 – col. 5, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the anti-pads in the invention of Oggioni such that the voids do not completely overlap. The motivation for doing so would have been to provide equivalent shielding in layers having different dielectric thicknesses.

Additionally, the modified invention of Oggioni teaches wherein the first conductive plane comprises one of a power plane and a ground plane (see col. 4, lines 40-50) [claim 2], wherein the second conductive plane comprises one of a power plane and a ground plane (see col. 4, lines 40-50) [claim 3], wherein the first and second anti-pads are longer in a first direction than in a second direction (see col. 6, lines 5-10

which states the rings may comprise a polygon, such as a triangle or a rectangle) [claim 4], wherein the first and second anti- pads are partially voided anti-pads [claim 5], wherein the first and second anti- pads are configured for signals through the via signal barrel greater than approximately 2 GHz (see col. 6, lines 1-5) [claim 7].

Regarding the limitation "wherein the first and second anti- pads are configured to maintain board planarity" [claim 6], Examiner notes that this is an intended use limitation and thus only considered to the extent that a potential prior art be capable of performing the claimed function. In the instant case, Applicants' claimed invention and the prior art have the same structural features, therefore it is concluded that the prior art is indeed capable of being used as currently claimed.

Regarding claims 8-14 and 24-31:

Oggioni discloses, referring to figures 2a-b, a printed circuit board comprising: a first conductive plane (210b); a second conductive plane (210e) substantially parallel to the first conductive plane; a via signal barrel (145) transecting the first and second conductive planes; a first partially voided anti-pad (230b) positioned between the first conductive plane and the via signal barrel, the first partially voided anti-pad having a first pattern and a first orientation; and a second partially voided anti-pad (230e) positioned between the second conductive plane and the via signal barrel, the second partially voided anti-pad having a second pattern and a second orientation. Oggioni does not specifically state that the first orientation is offset from the second orientation [claims 8, 24]. However, Oggioni teaches that when the dielectric layers of the PCB are

different thicknesses, each of the "anti-pad" can be individually crafted to achieve the desired impedance matching (see col. 4, line 50 – col. 5, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the anti-pads in the invention of Oggioni such that the orientations are offset. The motivation for doing so would have been to provide equivalent shielding in layers having different dielectric thicknesses.

Additionally, the modified invention of Oggioni teaches, wherein the first and second patterns are substantially identical [claim 10], wherein the first and second partially voided anti-pads are configured for signals through the via signal barrel greater than approximately 2 GHz (se col. 6, lines 1-5) [claims 11, 31], wherein the first pattern comprises one of a symmetric pattern and an asymmetric pattern [claims 12, 28], wherein the first pattern comprises one of a concentric circles pattern, a radial spokes pattern, and an arbitrary pattern [claims 13, 29], wherein the first pattern comprises a screen pattern (see col. 5, lines 55-60) [claims 14, 27, 30].

Regarding the limitation "wherein the first and second partially voided anti- pads are configured to maintain board planarity" [claims 9, 25], Examiner notes that this is an intended use limitation and thus only considered to the extent that a potential prior art be capable of performing the claimed function. In the instant case, Applicants' claimed invention and the prior art have the same structural features, therefore it is concluded that the prior art is indeed capable of being used as currently claimed.

Regarding the limitation that "the first and second anti pads are substantially oval shaped [claim 26], although Oggioni does not specifically state that they may be oval,

Oggioni does teach that rings may be of various shapes (see col. 6, lines 5-10). It would have been obvious to one having ordinary skill in the art at the time of invention to use an oval shape for the rings in the invention of Oggioni. The motivation for doing so would have been to use a known shape, easily manufactured which can effectively shield the via.

Regarding claims 15-23

Oggioni discloses, referring to figures 2a-b, a printed circuit board comprising: a first conductive plane (210b); a second conductive plane (210e) substantially parallel to the first conductive plane; a first via signal barrel (125) transecting the first and second conductive planes; a first anti-pad (230b) positioned between the first conductive plane and the first via signal barrel, the first anti-pad having a first length and a first width and a first orientation; and a second anti-pad (230e) positioned between the second conductive plane and the first via signal barrel, the second anti-pad having a second length and a second width and a second orientation. Oggioni does not specifically state that the first orientation is offset from the second orientation [claim 15]. Oggioni does not specifically state that the first orientation is offset from the second orientation [claim 15]. However, Oggioni teaches that when the dielectric layers of the PCB are different thicknesses, each of the "anti-pad" can be individually crafted to achieve the desired impedance matching (see col. 4, line 50 – col. 5, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the anti-pads in the invention of Oggioni such that the orientations are offset and/or such

that the first length and width are not equal [claim 16] and/ore such that the second length and width are not equal [claim 17] and/or such that the first and second lengths are equal and the first and second widths are equal [claim 20] and/or such the first orientation is substantially perpendicular to the second orientation [claim 22]. The motivation for doing so would have been to provide equivalent shielding in layers having specific dielectric thicknesses.

Additionally, the modified invention of Oggioni discloses wherein the first and second anti- pads are configured for signals through the first via signal barrel greater than approximately 2 GHz (see col. 6, lines 1-5) [claim 19].

Regarding the limitation "wherein the first and second partially voided anti- pads are configured to maintain board planarity" [claim 18], Examiner notes that this is an intended use limitation and thus only considered to the extent that a potential prior art be capable of performing the claimed function. In the instant case, Applicants' claimed invention and the prior art have the same structural features, therefore it is concluded that the prior art is indeed capable of being used as currently claimed.

Regarding the limitation that "the first and second anti pads are substantially oval shaped [claim 21], although Oggioni does not specifically state that they may be oval, Oggioni does teach that rings may be of various shapes (see col. 6, lines 5-10). It would have been obvious to one having ordinary skill in the art at the time of invention to use an oval shape for the rings in the invention of Oggioni. The motivation for doing so would have been to use a known shape, easily manufactured which can effectively shield the via.

Regarding claim 23, it is clear that the modified invention of Oggioni teaches not just a second, but several via/anti-pad constructions, all to be similar to the one specifically explained. Oggioni refers to a plurality of such constructions throughout the specification (see col. 3, lines 25-35 and col. 5, lines 10-20).

Response to Arguments

Applicant's arguments filed 15 September 2005 have been fully considered but they are not persuasive. Regarding claim 1, Applicants allege "Individually crafting the anti-pads to achieve the desired impedance matching does not teach or suggest that the first voided area does not completely overlap the second voided area. However, in this individual crafting it is entirely reasonable that the ordinarily skilled artisan, motivated to satisfy specific requirements (col. 8, lines 35-45) would construct the first and second voided areas to not overlap completely. Moreover, such a modification would also be considered a change of form of the device, and it has been held that more than a mere change of form is necessary for patentability. Span-Deck, Inc v. Fab-con, Inc. (CA 8, 1982) 215 USPQ 835.

Regarding claims 8, 15, and 24, Applicants allege "individually crafting the anti-pads to achieve the desired impedance does not teach or suggest that the first orientation is offset from the second orientation". While it *appears* that the figures of Oggioni display the anti-pads as being aligned, nowhere does Oggioni discuss that as being a critical feature of the device. Conversely, Oggioni suggests that the pads may be constructed differently in a ground plane layer than in a power plane layer (see col.

7, lines 20-35). Therefore, the ordinarily skilled artisan motivated to satisfy specific requirements (col. 8, lines 35-45) would construct the first and second voided areas to not overlap completely. Moreover, such a modification would also be considered a change of form of the device, and it has been held that more than a mere change of form is necessary for patentability. Span-Deck, Inc v. Fab-con, Inc. (CA 8, 1982) 215 USPQ 835.

Regarding claims 4, 14, 16, 17, 20, 21, 22, 26 and 30. Applicants allege "In addition, the Oggioni et al. patent fails to teach or suggest the first and second anti-pads are longer in a first direction than in a second direction (claim 4)., wherein the first pattern comprises a screen pattern (claims 14 and 30),. wherein the first length and the first width are not equal (claim 16); wherein the second length and the second width are not equal (claim 17); wherein the first length substantially equals the second length and the flrst width equals the second width (claim 20); wherein the first and second anti-pads are substantially oval shaped (claims 21 and 26); and wherein the first orientation is substantially perpendicular to the second orientation (claim 22). In support of this claim, Applicants allege that Oggioni teaches away from asymmetry. However, since Oggioni clearly teaches that the rings may be of any polygonal shape, it is clear that this sort of asymmetry is not harmful to the device. Indeed, Oggioni even teaches that the rings need not be completely closed aroud the via at all (see col. 6, lines 5-10).

Regarding claim 23, although it was not specifically explained in the previous Office Action, it is clear that the modified invention of Oggioni teaches not just a second, but several via/anti-pad constructions, all to be similar to the one specifically explained.

Oggioni refers to a plurality of such constructions throughout the specification (see col. 3, lines 25-35 and col. 5, lines 10-20).

Applicants provided no further specific arguments for the remaining claims, only a general allegation of patentability.

Therefore, having addressed each of Applicants' arguments, the traversal of the instant rejection is deemed unsuccessful.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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